FILE COPY
FOREST INSECT LABORATORY
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

638.2

FOREST INSECT SURVEY OF THE PLACERVILLE INFESTATION UNIT SEASON OF 1950

By

Robert Z. Callaham
Biological Aide

Forest Insect Laboratory
29 Forestry Bldg., U. C.
Berkeley 4, California
February 9, 1951

FOREST INSECT SURVEY OF THE PLACERVILLE INFESTATION UNIT

SEASON of 1950

By

Robert Z. Callaham, Biological Aide

Introduction

The trees in the arboretum and outplantings of the Institute of Forest Genetics are approaching such age and size that they are becoming more and more susceptible to bark-beetle attacks. The high value of these trees for both research and aesthetic purposes justifies their protection from these insects. It also is possible that the proposed insect resistance studies which are to be conducted on the grounds of the Institute may attract insect populations to these valuable trees from the everpresent bark-beetle populations in the forest type of the surrounding areas. With these facts in mind John M. Miller of this office has suggested that direct control action be taken against the bark-beetle populations which are present on both the Institute's property and the surrounding private lands to reduce the biotic potential of the insects of primary concern.

Therefore, a survey was conducted to determine the extent of the infestation which is in need of immediate control action on the affected areas and to determine the possibility of delimiting the zone of protection around the Institute. It is anticipated that control work on this area will be maintained on an annual basis from an allotment of forest pest control funds.

Results of Survey

During the period from January 30 through February 1, a general reconnaissance type of survey was made of the sixteen sections comprising a four-mile-square block surrounding the Institute. The survey was conducted by examinations of surrounding areas through binoculars from the high vantage points and by spotting the infested trees from a pick-up truck while driving over nearly all of the roads in the sections concerned. Most of the area was observed at close hand by this latter method, and the approximate effective limits of the survey are indicated in red pencil on the accompanying map. Certain of the more critical areas which were not observed will have to be examined when roads into these areas become passable in the spring.

Approximately one-half day was devoted to the road survey of each quadrant of four sections which are situated northeast, northwest, southwest, and southeast of the Institute.

Description of the Infestation Unit:

In general, the coniferous timber in the areas surrounding the Institute is of marginal type on poor site with the poorest timber found at lower elevations to the west and south of the Institute, and the best timber found at higher elevations to the east and northeast of the Institute. The prevailing winds during the daylight flight hours in spring and summer are from the west; thus, there is a greater possibility that beetle populations could move into the Institute from the more heavily infested northwest and southwest quadrants. Only a very brief description of each quadrant will be given at this time.

The quadrant of four sections situated northwest of the Institute embraces sections 32 and 33, T.11N., R.11E. and sections 3 and 4, T10N., R.11E. This quadrant slopes away to the north and west, and the areas immediately adjacent to the Institute are devoted to pear orchards separated on the ridge tops by stands of ponderosa pine. At distances of one to one and one-half miles from the Institute, although somewhat closer on north slopes, the pine type becomes continuous and, although cut over many years ago, it provides a fairly dense cover of pole-size trees. Some oak--digger pine mixtures are to be found at lower elevations on the northern and western fringes of this quadrant. The quadrant is well dissected with roads, and control operations in this area should be comparatively simple.

The 2, four-section quadrants situated to the southwest, sections 10, 9, 16, 15, T.10N., R.11E., and to the southeast, sections 12, 11, 14, 13, T.10N., R.11E., have fewer ridges of ponderosa pine and a greater preponderance of the bottomland, oak--digger pine type. The site in these two quadrants generally is the poorest of all and would represent a great potential bark-beetle hazard were it not for the scattered distribution of the ponderosa pine in these areas. Control action in these quadrants will be facilitated by the excellent road network in the sections immediately adjacent to the Institute; however, roads are lacking in many of the outlying areas.

The 4th, four-section quadrant situated to the northeast of the Institute, sections 1 and 2, T.10N., R.11E., and sections 34 and 35, T.11N., R.11E., generally is of the best timber type. The areas immediately adjacent to the Institute are primarily devoted to pear orchards separated

by ridges of ponderosa pine, and the main coniferous timber is to be found at distances of one and one-half to two miles from the Institute. In this latter region the ridge-top ponderosa pine gradually gives way to a vigorous mixed stand of Douglas-fir, incense cedar, and ponderosa pine, and the possibility of infestation from this area at present seems very remote. This quadrant, by virtue of the excellent road network, also is readily accessible for control action.

Following this analysis of the areas surrounding the Institute's grounds, the proposed boundaries of the Placerville infestation unit have been indicated on the accompanying map in green pencil. This boundary takes into consideration the physiographic features of the land, the distribution of the conifer species which act as hosts for the bark-beetles, and the direction of the prevailing winds at the time of insect flight. Needless to say, complete detection and the ultimate control of insect-infested trees within a one-half mile radius of the Institute is of the utmost importance, and this area should be given the highest priority.

Description of the Type of Infestation:

All of the trees spotted and shown on the accompanying map are ponderosa pines of varying sizes -- six to thirty-four inches DBH -- which were infested to varying extents with the California five-spined engraver beetle (Ips confusus Lec.) in the smaller trees and upper portions of the larger trees, or the western pine beetle (Dendroctonus brevicomis Lec.), or both. The work of the red turpentine beetle, (Dendroctonus valens Lec.) and flatheaded borers (Melanophila sp.) was also found in most of the infested trees. Digger pine normally found at the lower elevations has never been found to be infested with any Dendroctonus species other than

Dendroctonus valens; hence, it does not constitute a threat as a source of infestation of these beetles. Digger pine, however, has been found to be infested with Ips confusus and Ips latidens, and if these insects later are found to offer a threat to the trees at the Institute, control action against them by eradication of the infested digger pines may be necessary.

Location of the Infested Trees:

The approximate positions of the infested trees with the respective tree numbers have been plotted on the accompanying map. Most of these trees represent winter brood trees which should be controlled before emergence takes place in the spring; however, it should be pointed out that many of these trees are in the yards of private homes or in other areas which are not readily accessible. An exact determination of the nature of the infestation in these inaccessible trees will have to be made immediately prior to control action. This will necessitate having a representative of this office present at the time that the control action is in progress.

Number of Infested Trees:

Sixty trees were spotted in this survey but this number is not an accurate estimate of the total number of trees which will be in need of control action. It is probable that the broods in several of the trees which were spotted have already emerged, making control action on these trees unnecessary. On the other hand, there probably are ten to twenty percent more trees which will fade before the beetles start to emerge this spring than have already been detected. An allowance should also

be made for trees which may show up in the areas not covered intensively by this preliminary survey. After considering all of these factors, it seems advisable to allow a 50 to 60 percent margin of error and to estimate that there will be approximately 100 infested winter brood trees to be treated on the sixteen sections surrounding the Institute.

Recommendations

It is recommended that annual control action of two types be undertaken in the areas in question to reduce the biotic potential of the insects being controlled: (1) Control of the over-wintering broods during the period prior to beetle emergence in the spring, and (2) maintenance control of the broods which develop during the successive summer generations. Maintenance control, if well coordinated with the spotting of infested trees by personnel of this office during the summer months, should prove effective in reducing the large amount of work involved in controlling the over-wintering broods, and should reduce the annual expenditure necessary for the total control operation.

Recommended Control Methods:

It is recommended that falling, limbing, and bucking of the infested trees be done as soon as possible. All trees of a size such that they can be easily handled by hand labor should be piled and burned. Trees too large to be piled may be treated with a fuel-oil solution of ethylene-dibromide (2-1/2 pounds of insecticide to 5 gallons of fuel oil). This should be applied evenly over the stem to the point of run-off (approximately 3 to 10 gallons of spray per tree, depending upon tree size). Application may be accomplished by the use of a back-pack

sprayer or simply by pouring from a common garden sprinkling can. The logs should be rolled during this process to assure an even application of the solution to all surfaces of the logs. The spray should be applied slowly enough to allow it to penetrate into the bark so that there is a minimum of run-off.

It is estimated that the cost per tree for control of the over-wintering broods by these methods will be $15.00. This would require a total allotment of $1500.00 to complete the control of the estimated 100 trees.

Forest Insect Laboratory
Berkeley, California
February 9, 1951

SUBMITTED BY:

Robert Z. Callaham

Robert Z. Callaham
Biological Aide

APPROVED BY:

Geo. R. Struble

Geo. R. Struble
Acting in Charge

ADDITIONAL INFORMATION ON LOCATION AND DESCRIPTION OF TREES CONTAINING OVER-WINTERING BROODS ON THE PLACERVILLE INFESTATION UNIT, SEASON OF 1950

Township	Range	Sect.	Tree* No.	DBH	Tree Location and Description
10N	11E	1			
		2	40	20"+	At the edge of field due south of "J.A. Irving & Son" sign. New fade in broken top.
		3	1	28"	Next to burning pit at lava flat junction. Two-thirds topkill.
			41	20"+	Contractor's backyard. Topkill.
			42	20"	Opposite mail box numbered Rt. 1, Box 242. Small very high risk, not faded.
			50	20"+	On SW side of ridge visible from Smith Flat. Topkill.
			51	20"	As No. 50.
		4	18	30"	On old county road that takes off from the main Placerville road at a trailer next to a house under construction. Very high risk but not sorrel.
			19	20"	As No. 18.
			52	20"-	100 ft. west from road which skirts edge of pear orchard. Small topkills.
			53	20"-	
			54	20"-	
		9			No trees in this section.
		10	55	?	200 feet west of new brick house on knoll above railroad tracks. Full length & topkills.
			56		
			57		
			58		
			60	?	On top of steep bluff north of junction of railroad and US50. Full length & topkills.
			61		
			62		
			63		
		11	24	20"+	On property of L. W. Parks, 300 feet SW of his house. Topkills.
			25		
			26		
			27		
			28		
			29		
			30		
			32	20"+	Visible from road just after it turns to the south. 300-400 yds. east. Full of length kill.
		12	33	20"+	In clump of trees near a new white house 1 block west of Gatlin's private road.
			34	20"-	Tree #33 is a full-length kill; tree #34 is a topkill.

(continued)

Township	Range	Sect.	Tree* No.	DBH	Tree Location and Description
		13	35, 36, 37	?	Small group kill south of road intersection.
		14	31	20"+	300 feet SW of a sharp turn in the road past Parks' house. Topkill
		15			No trees in this section.
		16			Ditto.
11N	11E	32	44	12"	At junction of 2 power lines.
			45	20"	
			46	20"-	200 feet north of the road, may be an old kill.
			47, 48	?	400 feet north of the road, and NW of tree #46. Both sorrel fades.
		33	15	26"	200 feet west of road from a sign to Carver's. Lone topkills.
			16	34"	
			43	20"+	400 feet SW of road. Probably just over the ridge top from the upper road. 2/3 top kill.
			49	20"-	400 feet West of road just above a reservoir. Small topkill.
			"X"	?	Two group kills next to power line at top of ridge above reservoir.
		34	2	14	Large group kill at edge of road. Full length & topkills.
			3	8	
			4	8	
			5	12	
			6	12	
			7	6	
			8	6	
			9	12	
			10	14	
			11	12	
			12	16	
			13	16	
			14	12	
		35	22	14"	200 feet west of road into meadow. Complete kills.
			23	8"	
			38, 39	?	600 feet south of road, about 400 feet east of mill. Complete kills.
TOTAL			60 trees		

* Trees #1-30 have a keel number on a blaze at breast height. Nos. 17,20,21 are missing.